Effects of Maternal Employment and Child Care on Children's Obesity Risk: Do Child Care Arrangements Matter?

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1. INTRODUCTION

Childhood obesity rates have increased dramatically in the last three decades. Between 1976 and 2004 obesity rates for children between the ages of 6 to 11, for example, increased from 5 to 17 percent (Centers for Disease Control and Prevention, 2007). Researchers, policymakers, and medical professionals, who have become increasingly alarmed by the childhood obesity epidemic, have intensified their research to find potential explanations for what may have led to the risk in obesity prevalence.

This study adds to the current obesity research by examining the impact of two factors that also saw dramatic upward trends during the same time period: mothers' labor force participation and child care usage. Furthermore, I investigate the effects of two types of child care arrangements: informal child care, such as with a relative, sibling, or babysitter; and formal child care, defined as child care in a regulated facility outside a home. Regulations on how child care should be provided vary widely from state to state and very few restrictions and/or guidelines exist for informal child care settings. As a result, there are wide variations in quality across child care providers.

Maternal employment may affect a child's obesity risk through several mechanisms. Children of working mothers may eat less home-cooked meals and more high-calorie fast foods or pre-cooked meals. In addition, they may spend more time unsupervised and engaging in sedentary activities such as playing computer and video games (Anderson et al., 2003). On the other hand, the extra income earned by mothers (assuming all else equal) may result in purchases of higher quality foods and engagement in activities such as after-school sports. Some researchers also posit that depression and self-esteem of working mothers are higher than those who stay at home. These benefits may potentially spillover to their children in the form of higher quality care.

Similarly, child care may affect obesity risk through several avenues. As the mother's time spent away from home increases, children spend a greater amount of time in the care of others such as relatives, siblings, and babysitters (informal child care) or in child care facilities (formal child care). Children in informal child care settings, for instance, who have relatives such as grandparents taking care of them, may be less likely to engage in rigorous activities if grandparents are unable to participate in physical activities with the child. However, babysitters may be more likely to engage in rigorous play and pay greater attention to what the children are eating, because they only have to pay attention to one child (compared to large numbers of children in child care facilities).

Similarly, the impact of child care received in formal child care facilities is not clearly understood. Child care facilities that stick to regimented eating and activity schedules may be

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more likely to feed healthy snacks and to have children participating in rigorous play with their peers. However, the large number of children in a given facility may make it difficult for care givers to provide individualized attention that informal child care providers may be able to give. Without further empirical investigation it is difficult to ascertain whether there truly are differences in the effect of child care by the type of care received.

To this end, this study examines the impact of mothers' employment and alternative child care decisions on the body mass status of elementary school-age children using data from the Early Childhood Longitudinal Study, Class of 1998-1999 (ECLS-K). In estimation, I control for observable child, family, and geographic characteristics and unobservable factors using several alternative estimation approaches. The preferred estimation technique jointly estimates the employment and child care decision equation with the obesity outcome allowing for the unobserved heterogeneity error components to be correlated both contemporaneously and over time. I find that full-time employment reduces the risk that a child is overweight or obese. Furthermore, I find that informal child care (for full-time workers) is associated with a significant increase in children's risk of being overweight whereas formal child care has no significant effect.

2. METHODS

In estimating the impact of a mothers' employment and child care decisions on children's obesity risk, I am unable to directly model the physiological causes of obesity (i.e. caloric intake and expenditure), but am able to examine and empirically evaluate the impact of factors that influence these inputs (i.e. maternal employment and child care) on childhood obesity. The challenge in recovering the correct effect is that I have to be sure to control for characteristics that are potentially correlated with demand for employment and child care that are also related to a child's obesity status. Otherwise, the estimates I obtain of the impact of maternal employment and child care on obesity may be confounded by the effects of the omitted traits. Unfortunately, characteristics that should be controlled in estimation, but are difficult to numerically quantify (e.g. a mother's level of ability or motivation-factors that are likely to influence her employment and child care choices, and her child's obesity status) are often unavailable in the data.

I address this issue in my research in three ways. First, I control for a large number of observable child, parental, and county- and state-level observable characteristics that may be correlated with the mother's employment and child care choices, and also child health. Second, I used a fixed effects model to control for potential time-invariant unobservable characteristics. Third, I employ an instrumental variables estimation technique, the discrete factor approximation, that requires an observable variable related to maternal employment and child care, but is unrelated to the missing characteristic. The instrumental variables used in this analysis have all passed econometric tests that signify whether they are acceptable instruments and include average unemployment rates, education levels, and child care workers' wages, at the county and state level. Application of the discrete factor estimation method allows a common unobservable factor to influence a mother's employment and child care decision, as well as a child's obesity status and results in more precise estimates of the effects.

3. DATA

Data from the restricted use version of the Early Childhood Longitudinal Study Kindergarten Class of 1998-1999 (ECLS-K) are used in this analysis. The ECLS-K has followed a nationally representative sample of 21,409 kindergartners since the fall of 1998. The last survey was conducted in the spring of 2007, when most of the children were in the eighth grade. To conduct my analysis, I use standard demographic information (e.g. age, sex, and race) as well as anthropometric measures (i.e. height and weight) from three years of the survey (2000, 2002, and 2004). In addition, I use restricted use Geocode data, available through a contract with the U.S. Department of Education, to identify the state of residence for each child and to match him/her with county- and state-level information such as food and child care prices.

4. PRELIMINARY RESULTS AND DISCUSSION

This analysis examines two potential contributing factors, mother's employment and informal and formal child care usage, on children's obesity risk. There are two main findings from this analysis. First, full-time employment with no child care (compared to no work and no child care) decreases the risks of being obese and overweight. Second, informal child care for full-time workers increases the risk that a child is overweight. However, formal child care for full-time workers has no significant effect on the risk of being overweight or obese.

This analysis lays the foundation for future work on the effects of employment and child care on children's health and provides insight into the potential detrimental impact of informal child care on children's health. Despite extending the current literature by analyzing informal and formal child care settings separately, this work is limited in that I am unable to capture the *quality* of child care settings that may provide more information on how to better monitor or regulate child care. Furthermore, it may be interesting (if the data were available) to examine the avenues through which children's health is affected by informal child care to answer questions such as: is the increase in obesity and overweight risk through activity or dietary behaviors? Nevertheless, this analysis highlights that a deeper understanding of the current child care system may be necessary to promptly address the current childhood obesity epidemic.

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